

## Final Technical Report

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**Title of Award** “Earthquake Insight for Key Central and Eastern US  
Decision-Makers: Extrapolating Proven Outreach Methods  
to New Areas and New Audiences”

**Author** Phyllis J. Steckel, RG  
Earthquake Insight LLC  
PO Box 2002  
Washington, MO 63090  
636-239-4013  
[psteckel@charter.net](mailto:psteckel@charter.net)

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### Abstract

**The Problem:** Results of earthquake hazards research often do not reach the people who can most effectively use it. This audience includes those who can better mitigate earthquake hazards in the central and eastern US. Too often, earthquake hazards research results are either inaccessible or unclear (or both) to this critical, yet non-technical, audience. Since the 2011 Mineral, Va., earthquake, public-sector and private-sector decision-makers and policy-makers especially need to know more about overall earthquake hazards and earthquake risks in the eastern US. Also, results of earthquake hazards research often are presented with too much scientific detail and not enough business relevance. Often, it is not clearly accessible or relevant to those having the authority and responsibility to change policy and practice.

**Summary of the Approach:** For many years, there have been specific events for public- and private-sector leadership to convey the message of central US earthquake hazards and earthquake risks. The *Earthquakes: Mean Business* program, held in St. Louis, Mo., began in 1994 and was held annually through 2013. The last *Earthquakes: Mean Business* program included over 300 participants, 25 exhibitors, and key speakers from all over the country. *Earthquake Insight Field Trips* began in 2005 and have been held annually since then. There are about 225 alumni of past *Earthquake Insight Field Trips* from all over the country. Participant have included executive-level decision-makers from State Farm, Pfizer, FEMA, FM Global, the Missouri State Senate, Odyssey Re, Dillard’s, AEP River Ops, Country Financial, US Army, Growmark, Wal-Mart, Chubb, USDOT, California Dept. of Insurance, Ameren, AON, AG Edwards (now Wells Fargo), ABC/Disney, General Re, Time-Warner, Edward Jones, The Republic Group, Shelter Insurance, St. Paul/Travelers, Enbridge, Swiss Re, SAIC, CenterPoint Energy, US Social Security Administration, and many others. Participants have changed earthquake-hazards policy and practice at these organizations as a result.

**Project Objectives:** This project focused proactive outreach on decision-maker audiences. These include those located in both the central US and the Washington DC area. The focus was on key business leaders in the sustainability, financial, and risk management sectors.

**Implications of the Project:** Geoscientists have long recognized the very real risk of earthquakes in the central US. And engineers know how to design structures to resist earthquakes. But unfortunately, a lot of new development, accepted procedures, and embedded business metrics still do not consider earthquake hazards. Sites are selected and projects are built without really considering earthquakes. As a result, much of the built environment is at high risk from earthquakes. These events and efforts will help participants recognize this gap between *what we know about earthquakes* and *what we do about them* – and take action to close it. Lives and property are at stake.

## **Report**

This original project plan included an ambitious list of earthquake-hazards outreach events and audiences in known and unknown markets of the central and eastern US. However, budget realities and other events and conditions outside the control of this project required that the list of project scope and events be changed and re-defined during the course of the work.

Budget reductions or eliminations and staffing challenges of several other agencies and organizations that had been a key part of these events in the past were also problematic. These were unanticipated at the beginning of the planning process. While the plan for this project remained true to the plan as described in the final contract, other agencies and organizations either totally eliminated their support or scaled back their support to the point of being impossible.

As a result, some of the plans and efforts for this project were for naught due to these surprise external losses of support during the course of work. Other plans and efforts were successfully morphed to ‘make do with what we’ve got.’ Still others were unanticipated successes due to a combination of serendipity and dumb luck.

### **“Earthquakes: Mean Business”**

This event originally was planned for Friday, February 7, 2014. However, it was not possible to stage the 21<sup>st</sup> Annual “Earthquakes: Mean Business” event.

One major blow to this planning effort was that the facility host, Saint Louis University (SLU), re-located the space reserved for the event, without notice to Earthquake Insight LLC. This news was found out accidentally, about three months before “Earthquakes: Mean Business” was to have been presented – and well after significant planning time by Earthquake Insight LLC had already been invested in the event.

The new physical space at SLU that was allotted to “Earthquakes: Mean Business” was not appropriate for the event. There was no room for exhibitors or the four break-out sessions, and the acoustics were questionable. Exhibitors, and the revenue they would provide, were crucial to the event. Access and parking presented additional challenges. This change would have meant re-planning much of the template that had been successfully used in past years.

Also, all of the Saint Louis University support staff who helped with the “Earthquakes: Mean Business” events in past years were now unavailable for the 2014 event. All had moved on to new employers or had retired, and the responsiveness of the SLU engineering college leadership was slow at best. The personal relationship between Earthquake Insight LLC and these support staffers was a key to

the success of past events: they were personally interested in the event and ‘made things happen.’ Without their presence and persistence, planning became essentially impossible.

In past years, the Federal Emergency Management Agency (FEMA) had provided modest monetary support for “Earthquakes: Mean Business.” This helped to cover some of the expenses, such as travel for some speakers. However, in 2014, and on short notice, this support was cut to zero. Also due to federal belt-tightening, no FEMA staff or employees would be allowed to attend or participate. This would have decreased the amount of revenue that event registrations would have provided and increased the financial exposure to Earthquake Insight LLC.

At this news, the financial risk to Earthquake Insight LLC was too great to continue planning the effort. There was neither time nor resources to look for additional sponsorship elsewhere from government or private sources. As a result, the 2014 “Earthquakes: Mean Business” did not happen.

This is an especially unfortunate outcome after 20 successful years.

### **“Earthquake Insight Briefing”**

On Wednesday, February 19, 2014, the “Earthquake Insight Briefing” was held in Washington DC. This event was modeled after the “Earthquakes: Mean Business” event that had been held in St. Louis, Mo., for so many years. The main goals of locating the event in Washington DC was to take advantage of the co-location of high-level government and private decision-makers in the area and to capture the ‘window of opportunity’ that was still in the air after the 2011 Mineral, Va., earthquake.

The template for this first “Earthquake Insight Briefing” in Washington DC was changed slightly from past events in St. Louis. The title included the word “Briefing” – everyone in Washington DC is busy and wants to keep things “brief.” A half-day event was planned, rather than a whole day. The break-out sessions were eliminated. Speakers included those who were familiar with the East Coast region, culture, and perspective. The venue was selected for its proximity and visibility to highest-level decision-makers.

All in all, the first “Earthquake Insight Briefing” went well. The keynote address was given by Dr. Wayne Clough, Secretary of the Smithsonian Institution – a kindred spirit and earthquake engineer by training. Other technical talks were given by Dr. Steven Jaume of the College of Charleston; Dr. J. Wright Horton, USGS Reston; Dr. Thomas Pratt, USGS Reston; Mr. Morgan Eddy, PE, Steele Foundations in Washington, DC; Dr. Deborah Pettit, Louisa County (Va.) Public Schools; Dr. Ann Brower (via web link) from Lincoln University in Christchurch, N.Z.; and Dr. Martin Chapman, Virginia Tech. The topics addressed by each speaker were assigned in a way that the overall message dovetailed well. The message was powerful and supported the geoscience, engineering, financial, practical, and personal perspectives of earthquake risk in the central and eastern US.

While the number of participants at the “Earthquake Insight Briefing” was not large (about 30) it did attract some of those from key public and private sector. Some of the participants also learned of the event through their Congressional representative – and important indicator that the invitation was received and processed in a positive manner by high-level legislators or their staffs. Some other participants learned of the event through their professional and industry organizations: groups that serve the financial, risk management, insurance, investment, equity, and similar private sectors were targeted and received announcements about the 2014 “Earthquake Insight Briefing.”

For some reason, there was a higher number of no-shows or last-minute cancellations for this event; it is unknown if this was due to a common reason, eternally congested traffic in the area, or the high level of ‘busyness’ of these participants.

A critique of the “Earthquake Insight Briefing” was requested from the participants. The feedback was positive for all significant parts of the program. The lowest marks were for the program’s schedule, which was perceived to be too rushed – more time for questions and discussion would have been better. There were no negative comments received from any participant. Not all participants filled out a critique sheet, and not all provided comments. Some of the comments that were received from the participants included the following.

*“Excellent ‘first try’ to do this in Washington DC. I think more and earlier marketing would help. Also, unfortunately, we need to scare the decision-makers rather than educate.”*

*“A speaker on repair/mitigation due to earthquake damage would add an additional insight to the briefing. It was a great meeting! Time to network was not there. Possible solution is to start at 8:30 for informal interactions.”*

*“I think the program provided a good range of topics and my only real recommendation would be to shorten the presentations to allow more time for questions and discussions. The Christchurch earthquake presentation [Anne Brower, via web link from Christchurch] was the highlight of the day.”*

*“Very informative with valuable content.”*

*“Name tags – a must! Attendee list/contact information would be helpful. Not enough time for networking. Some of the speakers used too much technical terminology.”*

*“More info on how to mitigate the risks [should be] presented.”*

*Accelerated schedule (short day) didn’t leave as much time as I would have liked for networking. Excellent program – good job!”*

*“Well done. Information was well presented and should be repeated in parts for 2015.”*

*“Speakers were excellent. Venue was excellent. Extremely informational – thank you.”*

*“Although Washington central location, it was inconvenient getting here – traffic horrific.”*

*“This was an excellent briefing. Although the speakers had highly technical backgrounds, the information was presented in easily understood verbiage and language.”*

All in all, the “Earthquake Insight Briefing” was a success. There were most definitely challenges in planning the first such event, especially for an audience that has a lot of competition for its attention and in a distant and high-cost area. However, the interest was real and the results were encouraging. Should the resources be available in the future, a similar program here should be considered.

## **“Earthquake Insight Field Trip”**

Originally, an Earthquake Insight Field Trip had been proposed for the Washington DC-Central Virginia area within the scope of this project. However, numerous complications arose during the first weeks of planning. These complications included access difficulties to various sites in the Washington DC area that had received earthquake damage from the 2011 Central Virginia earthquake. It also included a tenuous outlook for USGS personnel due to various federal government shut-downs – several USGS geoscientists were to provide key input to this field-trip route and overall plan. After discussion with several USGS geoscientists in the Reston and other offices, it was concluded that proceeding with plans for a Washington DC-Central Virginia Earthquake Insight Field Trip would result in significant financial risk to Earthquake Insight LLC.

With input and agreement from those USGS geoscientists, there was a mutual decision to forego an Earthquake Insight Field Trip for the Washington DC-Central Virginia area. In the meantime, several other opportunities for outreach to key audiences of decision-makers became available.

Within a few weeks, an opportunity to stage an Earthquake Insight Field Trip in the central US came about. During participation in the Geoscience Congressional Visits Day sponsored by the American Geosciences Institute (AGI) (September 18, 2013) in Washington DC, contact was made with Dr. Melissa Lenczewski of Northern Illinois University in DeKalb, Ill. After several weeks of discussion and planning via email and telephone, it was agreed that Northern Illinois University and Earthquake Insight LLC would host a student version of the Earthquake Insight Field Trip in the central US. This field trip was also open to others who were not students.

Northern Illinois University handled most of the marketing and advertising for this event to academic audiences. However, Earthquake Insight LLC was able to complete some limited marketing and advertising to industry audiences. This Earthquake Insight Field Trip was held March 28-30, 2014, and included about 14 participants. The template from past Earthquake Insight Field Trips was used, and many of the same stops were included in the route. It should be noted that on this field trip there were more non-students than students. The non-students included faculty from Northern Illinois University, DeKalb, Ill.; Central Illinois University, Macomb, Ill.; Southern Illinois University at Carbondale, Ill.; and Mesa Community College in Mesa, Ariz. All of the faculty participants were planning to incorporate what they learned on the Earthquake Insight Field Trip into their courses. Some were planning to model their own field trips for their classes on the route and stops in the Earthquake Insight Field Trip. One lone participant, from San Francisco, Calif., was professionally involved in venture capital, risk-modeling software – a key industry sector.

## **Other Efforts**

There have been several other opportunities for outreach to important audiences in the financial, risk management, insurance, investment, equity, and similar private sectors.

*Chartered Property Casualty Underwriters Annual Meeting; October 2013; New Orleans, La.*

Earthquake Insight LLC petitioned the Chartered Property Casualty Underwriters (CPCU) Society in early 2013, proposing to present a session on “Earthquake Hazards and Earthquake Risks in the Central US.” The proposal was successful, and an invitation to present at the annual meeting was made. The talk was presented to about 100 CPCU professionals and lively discussion followed. Gut feedback after the presentation was very positive. There were about 4,000 attendees at this annual meeting. Chartered Property Casualty Underwriters are mainly involved in risk assessments for insurers. This was the second-highest-powered audience ever addressed by Earthquake Insight LLC.

*Association of Financial Professionals Annual Meeting; October 2013; Las Vegas, Nev.*

Earthquake Insight LLC petitioned the Association of Financial Professionals (AFP) in early 2013, proposing to present a similar session on “Earthquake Hazards and Earthquake Risks in the Central US.” The proposal was successful, and an invitation to present at the annual meeting was made. The talk was presented to about 40 professionals and some reserved discussion followed. Gut feedback after the presentation was positive, although a bit cooler than that of the CPCU audience. (This was a very hard audience to ‘read.’) There were about 5,000 attendees at this annual meeting. Members of AFP are mainly involved with executive-level finance duties for major public and private organizations – they hold the corporate checkbooks of the country. This was the highest-powered audience ever addressed by Earthquake Insight LLC.

*Saint Louis University Sustainability Conference; November 2013; St. Louis, Mo.*

Earthquake Insight LLC was invited by the planners of the 2013 Sustainability Conference to present “Earthquake Hazards and Earthquake Risks in the Central US.” The talk was presented with Mr. Robert Williams (USGS Golden) and there were about 30 in attendance. There were about 150 attendees at this meeting. Gut feedback after the presentation was positive, and lively discussion followed. Meeting attendees were from local government, regional universities, local businesses, grass-roots environmental organizations, and other interested parties.

*Charleston Area Earthquake Hazards Mapping Project; March 2014; Charleston, S.C.*

Earthquake Insight LLC was invited by the planners of the kick-off meeting of the Charleston Area Earthquake Hazards Mapping Project to give a presentation on outreach ideas, suggestions, and perspectives. The talk was about 45 minutes, with questions and discussion following. There were about 20 attendees at this meeting. Gut feedback after the presentation was positive, and discussion followed. Meeting attendees were from local government, regional universities, historical preservation organizations, local businesses, and other interested parties.

*St. Louis Area Earthquake Hazards Mapping Project; St. Louis, Mo.*

Continued support was provided by Earthquake Insight LLC for the St. Louis Area Earthquake Hazards Mapping Project. This included several in-person meetings for the project personnel in St. Louis, as well as monthly project conference calls. The project is now in its final phase and will be completed soon.

*New Madrid Coordinating Committee; Central US*

Continued support was provided by Earthquake Insight LLC for the New Madrid Coordinating Committee. This includes monthly conference calls hosted by the University of Memphis’ Center for Earthquake Research & Information (CERI). This committee was formed several years before the New Madrid Bicentennial (2011-12) and was charged with coordinating events and efforts that focused on that anniversary. The value of this continuing open line of communication is very high, and it will continue for as long as such communication among various earthquake-hazards-related entities in the central US is needed.

## **Continuing the Message**

Earthquake Insight LLC has been dedicated to the message of earthquake hazards and earthquake risk in the central US for many years. Much has been learned, and most of it the hard way. There have been several efforts to pass on this information to others and keep it alive within the geoscience community.

*Association of Engineering & Environmental Geologists (AEG); September 2014; Scottsdale, Ariz.*

Earthquake Insight LLC was invited by meeting planners of the 2014 Annual Meeting of the Association of Engineering & Environmental Geologists to present on “Advocating for Geology and Geologists – Proactive Communication is in Your Hands.” This message included how to approach key industries that depend on geologists and geoscience, and how to leverage the voice of a small geoscience community to be represented among those in the financial, risk management, insurance, investment, equity, and similar private sectors.

Earthquake Insight LLC has earned a respected and respected voice within the geoscience community in Missouri, the central US, and beyond. Much personal effort continues toward the issue of earthquake hazards and earthquake risks in the central US. These include informal audiences, such as student groups and the local Lions Club, to the highest-level insurance and financial audiences.